schedule, extension of approval authorizing the changes will be granted.

[Sched. 12D, 10 FR 14895, Dec. 11, 1945, as amended by Supp. 1, 20 FR 2719, Apr. 23, 1955; 43 FR 12315, Mar. 24, 1978; 52 FR 17514, May 8, 1987]

PART 26—LIGHTING EQUIPMENT FOR ILLUMINATING UNDERGROUND WORKINGS

Sec.

AUTHORITY: 30 U.S.C. 957, 961.

SOURCE: Schedule 29A, 23 FR 9479, Dec. 6, 1958, unless otherwise noted.

§ 26.1 Purpose.

The regulations in this part set forth the specifications and requirements for mine-lighting systems to procure their approval and certification as permissible for use in coal mines and certification of components for use in permissible lighting systems; procedures for applying for such certification.

[Schedule 29A, 23 FR 9479, Dec. 6, 1958, as amended at 52 FR 17515, May 8, 1987]

§ 26.2 Definitions.

As used in this part:

(a) *Permissible,* as applied to mine-lighting systems, means that the system conforms to the specifications and requirements of this part, and that a certificate of approval to that effect has been issued.

(b) *Certificate of approval for permissibility* means a formal document issued by MSHA stating that the system has met the specifications and requirements in this part and authorizing the use and attachment of an official approval plate.

(c) *Certification of components* means a statement in a letter of certification issued by MSHA that the components which are intended for use in permissible mine-lighting systems have satisfied all of the applicable requirements prescribed in this part.

(d) *Lighting system* means a complete assembly of all the components required to establish illumination, including the fixtures, wiring, connectors, circuit-protection devices, and any other related parts.

(e) *Incentive spark* means an electric spark or arc capable of igniting flammable methane-air mixtures.

(f) *Intrinsically safe* means a fixture, a combination of parts, or an electrical circuit that will not cause ignition of flammable methane-air mixtures in any normal operation, during an intended manipulation, or when accidentally broken, if properly installed and supplied by a voltage that does not vary excessively from the nominal rating. (For the purpose of this part, the definition may include, for example, certain types of fluorescent lamps which when broken will not cause ignition of flammable methane-air mixtures.)

(g) *Fixture circuit* means the circuit or wiring contained in the fixture enclosure.

(h) *Explosion-proof* means capable of withstanding internal explosions of methane-air mixtures without damage to the enclosure or discharge of flame. For detailed requirements see Part 18 of this subchapter (Schedule 2F).

(i) *Explosion resistant* means an enclosure not built to explosion-proof specifications but capable of withstanding internal explosions of methane-air mixtures without igniting surrounding explosive methane-air mixtures, and without damage to the enclosure.

(j) *Drip-proof* means so constructed or protected that the successful operation

of a lighting fixture is not interfered with when it is subjected to falling moisture or dirt.

(k) *Distribution box* means a portable enclosure in which one or more portable cables may be connected to a common source of electrical energy.

(l) *Normal operation* means the performance of those functions for which the component was designed.

(m) *Portable cable* means a flexible cable by means of which a portable lighting system may be connected to a source of electrical energy.

(n) *Frame ground* means a connection through a separate conductor to all exposed metallic castings and other parts which will maintain the casings and components at ground potential.

(o) *Sectional unit* means a lighting fixture that may be added to or removed from a lighting circuit as work advances or retreats.

(p) *MESA* means the United States Department of the Interior, Mining Enforcement and Safety Administration. Predecessor organization to MSHA, prior to March 9, 1978.

(q) *MSHA* means the United States Department of Labor, Mine Safety and Health Administration.

(r) *Applicant* means an individual, partnership, company, corporation, association, or other organization that designs, manufactures, or assembles, and seeks certification, or preliminary testing of a lighting system or its components.

[Sched. 29A, 23 FR 9479, Dec. 6, 1958, as amended at 39 FR 24002, June 28, 1974; 43 FR 12316, Mar. 24, 1978]

§ 26.3 Consultation.

By appointment, applicants or their representatives may visit Approval and Certification Center, Box 201B Industrial Park Road, Dallas Pike, Triadelphia, W.Va. 26059 to discuss with qualified MSHA representatives proposed designs of equipment to be submitted in accordance with the requirements of the regulations of this part. No charge is made for such consultation.

[Sched. 29A, 23 FR 9479, Dec. 6, 1958, as amended at 43 FR 12316, Mar. 24, 1978]

§ 26.4 Type of equipment that may be granted certificates of approval for permissibility.

Certificates of approval for permissibility will be granted for completely assembled lighting systems only and not for individual parts or subassemblies. A certificate of approval for permissibility shall include all components, cables, and equipment used in other than fresh intake air, and also, necessary protective devices which may be housed in non-explosion-proof enclosures located in fresh intake air.

§ 26.5 Components that may be certified.

Manufacturers of components that are designed for use in permissible mine-lighting systems may request MSHA to issue a letter certifying to the suitability of components for such use. To qualify for certification, components shall have satisfactorily met the prescribed inspection and test requirements, and the construction thereof shall be adequately covered by specifications officially recorded and filed by MSHA.

§ 26.6 [Reserved]

§ 26.7 Tests and investigations.

Unless the application states otherwise, it will be presumed that a complete investigation for certification is desired. However, the application may be expressly limited to some element or phase less than a complete investigation. If the tests at any stage indicate that the lighting system does not conform to the specifications in this part, MSHA may treat the application as one for a partial investigation up to that point. Complete investigation for certification will not be undertaken unless the equipment has been fully developed, is ready to be marketed, and is submitted completely assembled, including parts, connectors, and all related materials.

§ 26.8 Applications.

(a) No investigation or testing will be undertaken by MSHA except pursuant to a written application, in duplicate, accompanied by a check, bank draft, or money order, payable to the U.S. Mine Safety and Health Administration to

cover the fees, and all prescribed drawings, specifications, and related material. The application and all related matters and all correspondence concerning it shall be sent to Approval and Certification Center, Box 201B Industrial Park Road, Dallas Pike, Triadelphia, W.Va. 26059.

(b) The equipment to be tested may be shipped (charges prepaid) at the same time the application is submitted, or, at the option of the applicant, shipment of the equipment may be deferred until MSHA has notified the applicant that the application will be accepted.

(c) Drawings and specifications shall be adequate in number and detail to identify fully the design of the device and to disclose its materials, detailed dimensions of all parts, and include a wiring diagram. Drawings must be numbered and dated to insure accurate identification and reference to records and must show the latest revision. Specifications must be given for materials, components, and subassemblies.

[Sched. 29A, 23 FR 9479, Dec. 6, 1958, as amended at 43 FR 12316, Mar. 24, 1978]

§26.9 Specifications; all types of lighting systems.

(a) MSHA will not test or investigate any lighting system that in its opinion is not constructed of suitable materials, that evidences faulty workmanship, or that is not designed upon sound engineering principles. In addition to any specifications or requirements imposed by the regulations in this part, MSHA may impose such further specifications or requirements as in its opinion are necessary or proper to investigate or test the particular device submitted.

(b) Adequacy of design and construction will be determined in connection with the following factors: Kind and durability of materials, test of active parts, resistance to moisture, drop test, insulation measurements, durability of construction, practicality in operation, suitability for underground service, and performance characteristics during the investigation. Since all possible designs, arrangements, or combinations cannot be foreseen, MSHA reserves the right to make any tests or to place any limitations on equipment or parts of equipment not specifically covered herein to determine the safety of such equipment with regard to explosion and fire hazards.

(c) The following types of lighting fixtures will be considered: (1) Intrinsically safe, and (2) explosion proof.

(d) All components must be designed and constructed in such a manner that they will not create an explosion or fire hazard.

(e) All enclosures must be essentially of ''drip-proof'' design.

(f) All fixtures and related components in a lighting system must be so designed that the temperature of external surfaces will not exceed 390° F. (200° C.) at any point during continual operation.

(g) No certificate of approval will be issued for a lighting system if the electrical pressure (difference of potential) of the power supply exceeds 300 volts direct current or 260 volts alternating current at the input terminals of any lighting fixture.

(h) The clearances between live parts and casings shall be such as to minimize the possibility of electric arcs between them, or if space is limited, the casing shall be lined with adequate insulation.

(i) Phenolic and other insulating materials that give off highly explosive gases when decomposed by heat, such as may be generated electrically, shall not be placed within enclosures where they might be subjected to destructive electrical arcing.

(j) All lighting circuits shall be provided with short-circuit protection. If distribution boxes are used for this purpose, they must conform with all of the applicable requirements of Part 18 of this subchapter (Schedule 2F) unless these distribution boxes are installed in fresh intake air. The circuit of each lighting fixture shall be protected against excessive overload currents.

(k) If an ungrounded system is used, which is electrically isolated from all other power circuits, fixtures and auxiliary equipment need not be frame grounded.

(l) If a grounded system is used, all cables must contain a separate grounding conductor to insure that all exposed conducting materials in the system will not exceed ground potential.

A device that will disconnect all power from the system in case of a ground fault will meet this requirement.

(m) Power conductors must not be used for grounding.

(n) Lighting systems and fixtures shall be designed for hanging from supports, so that cables or components are not permitted to rest on the mine floor.

(o) All lighting fixtures must be provided with a lock or seal. Any other fastening that requires a special tool for its removal will be construed as an effective seal. In place of a conventional lock or seal, an electrical or mechanical interlock may be provided to prevent gaining access to the lamps with power on. Provision for removal of lamps without arcing or sparking will also be acceptable.

(p) Lighting fixtures must be so designed that vibration will not shake the lamps loose from their sockets or holders.

§ 26.10 Specifications; intrinsically safe lighting fixtures.

(a) Intrinsically safe lighting fixtures shall be so constructed that they will withstand being dropped five times from a height of five feet on an oak platform in the presence of explosive methane-air mixtures. (In these tests Pittsburgh natural gas may be substituted for methane.) The safety elements of the fixture must function so that no explosion or fire hazard exists at any time during or after the tests. (Breakage of a fluorescent lamp will not in itself constitute test failure.)

(b) The fixture must be enclosed in an explosion-resistant housing that will afford mechanical protection and withstand a minimum of ten internal explosion tests in surrounding explosive atmospheres containing air with 7.0 to 10.0 percent of methane without (1) igniting the surrounding atmosphere, or (2) permanently distorting of any part of the fixture.

(c) Plastic material used in place of glass for lighting fixtures must not create explosion, fire, or toxic hazards when subjected to normal maximum operating temperatures.

§ 26.11 Specifications; explosion-proof lighting fixtures.

(a) All lighting fixtures that cannot be designed instrinsically safe shall be constructed strictly in accordance with the applicable requirements of Part 18 of this subchapter (Schedule 2F).

(b) Transparent plastics used in place of glass shall be of the thickness required of glass and shall not crack or shatter when struck by dripping cold water.

§ 26.12 Specifications; cable connectors.

(a) Connectors shall be constructed so as to afford a minimum of accessibility to live electrodes by any means other than the related plug.

(b) The material of which cable connectors are made must be equivalent to the insulation on the cables with respect to flame-resistant properties.

(c) Cable connectors shall meet the following requirements:

(1) A connector designed for a nominal 240-volt system shall be engaged and disengaged through 750 cycles under its rated load at 260 volts alternating current at 80 percent power factor.

(2) A connector designed for a nominal 120-volt system shall be engaged and disengaged through 750 cycles under its rated load at 130 volts alternating current at 80 percent power factor.

NOTE: The tests described in paragraphs (c)(1) and (2) of this section will be performed mechanically in the presence of explosive atmospheres containing air with 7.0 to 10.0 percent of methane. Ignition of the surrounding explosive atmosphere, destructive burning, distortion, and excessive temperature constitute failure.

(3) Under normal load, no part of any cable connector shall attain a temperature in excess of 175°F. during any of the prescribed tests.

(4) At 260 volts impressed, one cable connector shall be subjected to a short-circuit test at the maximum capacity of a 5 KVA transformer. The connector components will be mechanically engaged with the cable on the male portion short circuited at the plug. A time lag fuse of the maximum current rating of the connector will be connected in the circuit.

NOTE: The connector used for this test will be one already subjected to the cycling test described in paragraphs (c) (1) and (2) of this section.

Fusing of the contacts will constitute a failure.

(d) Cable connectors must be so designed that they will withstand a pull of 25 pounds without separating subsequent to the cycling tests described in paragraphs (c) (1) and (2) of this section.

§26.13 Specifications; portable cables.

(a) All portable cables shall have 600-volt insulation and shall have an outer jacket that is highly resistant to abrasion, moisture, and heat. They shall meet the flame-resistance requirements of Part 18 of this subchapter (Schedule 2F).

(b) The minimum conductor size acceptable for lighting circuits shall be No. 14 (AWG). In any case, cables must have conductors of a size equal to or greater than the National Electric Code standard. The current carrying capacity shall be based upon the maximum load that will be carried by the cables in normal service.

§26.14 Conduct of investigations and demonstrations.

Prior to the issuance of a certificate of approval, necessary Government personnel, representatives of the applicant, and such other persons as may be mutually agreed upon, may observe the investigations or tests. After the issuance of a certificate of approval, MSHA may conduct such public demonstrations and tests of the approved system as it sees fit. The conduct of all investigations, tests, and demonstrations shall be under the sole direction and control of MSHA, and any other persons shall be present only as observers. MSHA shall hold as confidential and shall not disclose the results of chemical analyses of material or the contents of the application and its accompanying drawings, specifications, and related material.

[Sched. 29A, 23 FR 9479, Dec. 6, 1958, as amended at 39 FR 24002, June 28, 1974]

§26.15 Certificate of approval for permissibility.

(a) Upon completion of investigation of a lighting system, MSHA will issue to the applicant either a certificate of approval for permissibility or a written notice of disapproval, as the case may require. If a certificate of approval for permissibility is issued, no test data or detailed results of tests will accompany it. If a notice of disapproval is issued, it will be accompanied by details of the defects, with a view to possible correction. MSHA will hold as confidential results of tests that terminate in a notice of disapproval.

(b) A certificate of approval for permissibility will be accompanied by a list of the drawings and specifications covering the details of design and construction of the lighting system upon which the certificate is based, and with the official approval number marked thereon. Applicants shall keep exact duplicates of the drawings and specifications that have been submitted to MSHA and that relate to any system which has received a certificate of approval, and these are to be adhered to exactly in production of the approved system for commercial purposes.

§26.16 Certification of components.

(a) Upon completion of investigation of a component intended for use in a permissible lighting system, MSHA will issue a letter of certification to the applicant, or a written notice of disapproval, as the case may require. If a letter of certification is issued, no test data or detailed results of tests will accompany it. If a notice of disapproval is issued, it will be accompanied by details of the defects, with a view to possible correction. MSHA will hold as confidential results of tests that terminate in a notice of disapproval.

(b) Letters certifying components may be cited to manufacturers or assemblers of permissible lighting systems as evidence that further inspection and tests of the components will not be required, provided they are constructed strictly in accordance with the specifications on file with MSHA. Such letters will specify a MSHA file

number to be used in marketing a certified component, as indicated in paragraph (a) of §26.18. Since MSHA does not issue certificates of approval for permissibility except as applying to complete lighting systems, no person shall advertise or label components in a manner indicating that such components are certified as approved for permissibility by MSHA. Certified components may be advertised as suitable for application in permissible lighting systems.

§ 26.17 Approval plate for permissible lighting systems.

(a) A certificate of approval for permissibility will be accompanied by a photograph of a design for an approval plate, bearing the emblem of the Mine Safety and Health Administration, space for the approval number, the type, the serial number, the class of device to which the approval relates, and the name of the applicant. When deemed necessary by MSHA, an appropriate statement of the precautions to be observed in maintaining the system in an approved condition shall be added.

(b) The applicant shall reproduce the design either as a separate plate or by stamping or molding it in some suitable place on each lighting fixture of a certified system. The size, type, method of attaching and location of approval plates are subject to the approval of MSHA. The method of affixing the plate shall not impair the explosion-proof or explosion-resistant features of any enclosure.

(c) The approval plate identifies the lighting system as permissible, and is the applicant's guarantee that the system complies with the specifications and requirements in this part. Without an approval plate, no lighting system is considered ''permissible'' under the provisions of this part.

(d) Use of the approval plate obligates the applicant to maintain the quality of the system which bears it, and guarantees that it is manufactured and assembled according to the drawings and specifications upon which a certificate of approval was based. Use of the approval plate is not authorized except on systems that conform strictly with the drawings and specifications upon which the certificate of approval was based.

[Sched. 29A, 23 FR 9479, Dec. 6, 1958, as amended at 43 FR 12316, Mar. 24, 1978]

§ 26.18 Markings for certified components.

(a) Certified components shall bear permanent markings satisfactory to MSHA and shall contain the following:

Certified _____
(Name of component)
MSHA File No _____

Rating or caution statement, whichever is applicable.

(b) Use of such markings obligates the applicant to maintain the quality of each component bearing it and guarantees that it is manufactured and assembled according to the drawings and specifications upon which certification was based. Use of such markings is not authorized except on components that conform strictly with the drawings and specifications upon which certification was based.

§ 26.19 Changes after certification.

If an applicant desires to change any feature of a certified system or component and have it covered by existing certification, he shall first obtain MSHA's approval of the change, pursuant to the following procedures:

(a) Application shall be made, as for an original certification, requesting that the existing certification be extended to cover the proposed change. The application shall be accompanied by drawings and specifications and related material as in the case of an original application.

(b) The application will be examined by MSHA to determine whether inspection and testing of the modified system or component will be required. Generally, inspection and testing will be necessary if there is a possibility that the modification may affect adversely the performance of the system or component. MSHA will inform the applicant whether such inspection and testing is required and the parts or materials to be submitted for that purpose.

(c) If the proposed modification meets the requirements and specifications of this part, a formal extension of

the certification will be issued accompanied by a list of new and corrected drawings and specifications to be added to those already on file as the basis for the certificate.

[Schedule 29A, 23 FR 9479, Dec. 6, 1958, as amended at 52 FR 17515, May 8, 1987]

§ 26.20 Withdrawal of certification.

MSHA reserves the right to rescind for cause, at any time, any certification granted under this part.

PART 27—METHANE-MONITORING SYSTEMS

Subpart A—General Provisions

Subpart B—Construction and Design Requirements

Subpart C—Test Requirements

AUTHORITY: 30 U.S.C. 957, 961.

SOURCE: 31 FR 10607, Aug. 9, 1966, unless otherwise noted.

Subpart A—General Provisions

§ 27.1 Purpose.

The regulations in this part set forth the requirements for methane-monitoring systems or components thereof to procure certification for their incorporation in or with permissible equipment that is used in gassy mines, tunnels, or other underground workings and procedures for applying for such certification.

[31 FR 10607, Aug. 9, 1966, as amended at 52 FR 17515, May 8, 1987]

§ 27.2 Definitions.

As used in this part:

(a) *MSHA* means the United States Department of Labor, Mine Safety and Health Administration.

(b) *Applicant* means an individual, partnership, company, corporation, association, or other organization that designs, manufactures, or assembles and that seeks certification or preliminary testing of a methane-monitoring system or component.

(c) *Methane-monitoring system* means a complete assembly of one or more methane detectors and all other components required for measuring and signalling the presence of methane in the atmosphere of a mine, tunnel, or other underground workings, and shall include a power-shutoff component.

(d) *Methane detector* means a component for a methane-monitoring system that functions in a gassy mine, tunnel, or other underground workings to sample the atmosphere continuously and responds to the presence of methane.

(e) *Power-shutoff component* means a component of a methane-monitoring system, such as a relay, switch, or switching mechanism, that will cause a control circuit to deenergize a machine, equipment, or power circuit when actuated by the methane detector.

(f) *Flammable mixture* means a mixture of a gas, such as methane, natural gas, or similar hydrocarbon gas with normal air, that can be ignited.